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ABSTRACT

The categorization of evidence through an "inverse inference" model is a preliminary attempt to organize the manner in which the ordinary language user perceives the use of evidence. While discussions on the nature of evidence have an important place in the realm of the theoretician and methodologist, this model attempts to explain how naive observers interpret and make sense of their world. The model begins with the assumption that individuals interpret events within a relatively stable frame of references. Ordinary language users treat as evidence those interpretations of phenomena which allow them to create meaningful classifications or apply them. The inferential process of connecting evidence with the interpretation of phenomena requires acceptance of several assumptions: evidence is inferred; evidence requiring less inference is preferred to evidence which requires greater inference; the frame of reference through which evidence is interpreted is subjective; and the frame of reference in relatively stable, even though it is subject to change. Three levels of evidence (in order of least inference required to most required) emerge for categorizing evidence types through the model: (1) evidence only requiring a perceptual inference; (2) evidence requiring both a perceptual inference and at least one level of logical inference by the observer; and (3) evidence requiring multiple levels of logical inference without a direct perceptual inference by the observer. Future elaboration of the model will explain the heuristic rules employed. (Contains 16 references.) (RS)

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An Inverse Inference Model of Evidence

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An Inverse Inference Model of Evidence

As scholars concerned with questions of whether our observations of phenomena warrant a particular interpretation, we construct theories, methodologies, and other indicators of what constitutes acceptable evidence. Most of the discussion about what constitutes standards of (or for) acceptable evidence occurs in discussions of theory or paradigms (e.g., B. Fisher 1977; Scheidel 1977; Delia & Grossberg 1977)[1] In these paradigm-based discussions of evidence, it is generally acknowledged that what passes for evidence or data is inevitably tied to the "logics" by which they are discovered and verified. (W. Fisher 1994).

While these discussions on the nature of evidence have an important place in the realm of the theoretician and methodologist, they usually do not capture either the meaning or use of evidence for the ordinary person. What I would like to articulate here is a conception of evidence that is appropriate to ordinary language use in the field of argumentation. This conception of evidence does not displace paradigm-based understandings of how observational data become interpreted and used as evidence. Rather, it attempts to explain how naive observers interpret and make sense of their world.

In developing this perspective, I begin with a brief description of what I have labelled an "Inverse Inference Model" of evidence, followed by an explanation of its underlying assumptions. The implications of this model to traditional evidence categories will conclude this manuscript. In a subsequent manuscript I will elaborate a set of cognitive heuristic principles

which account for how individuals interpret events in accordance to this model.

Inverse Inference Model

The inverse inference model begins with the assumption that individuals interpret events within a relatively stable frame of reference. Borrowing from Kelly (1963) that we are naive scientists testing a working hypothesis for our interpretation of events, persons, or phenomena, it is assumed that humans develop hypotheses to test their perception of reality. As long as these hypotheses are reasonably accurate in their prediction or description of events, we retain them. It is only when they fail in accounting for events that we become inclined to revise or discard them. Interpretation of events become classification schemes (Delia, O'Keefe, & O'Keefe 1982). That is, classification of an object, person, or event involves both recognition and placement of the recognized object, person, or event with similar elements (152). The process is analogical placing like objects within perceived functional categories.

If humans inherently attempt to interpret events within a relatively stable frame of reference, then what counts as evidence must be understand within this larger attempt after meaning. Evidence is not the event, phenomenon or artifact, per se. Rather, evidence is "the interpretation of an artifact signifying the existence or essence of phenomena within a frame of reference." Evidence is not self-evident. Evidence is not meaningful until we place it within an a frame of reference. As ordinary language users, we treat as evidence those interpretation of

phenomena which allow us to create meaningful classifications or apply them.

To the ordinary language user, the signification of the event--e.g., the leaves are falling, it must be Autumn--both designates the observed attribute (falling leaves) as well as infers the meaningful context in which to understand the event (Autumn). That is to say, the "logic" by which we interpret an event and associate it with a referent is inextricably linked. We engage in a process of tacit inference making (Polanyi 1969A).

The inferential process of connecting evidence with the interpretation of phenomena requires acceptance of several assumptions. First, and most importantly, evidence is inferred. By inference I mean a judgment about an event that exceeds the account we can offer for it. Unlike explicit inferences which operate in a (formal) logical account, ordinary language users recognize there is an association between an event and their interpretation without being able to give an explicit account of how they got there (Polanyi, 1969B). For instance, I may be aware that an acquaintance seems to be distracted, but unaware of what behaviors led me to that conclusion. Even in giving a partial account of apparent nervousness and fidgeting, my interpretation is more than the sum of the elements I have accounted for.

Inferences are "tacit" insofar as they offer a judgment which exceed their account. The ordinary language user "knows" beyond what can be explained. The tacit knowledge we possess

represents an analytic leap of faith which goes beyond a logical demonstration.

The second assumption of connecting inferences with phenomena in their use as evidence states that evidence requiring less inference is preferred to evidence which requires greater inference. In essence this assumption states that smaller leaps of faith are preferred to larger ones. Beyond the cognitive economy implied by this assumption, there is a practical implication of our eventual ability to provide an account of our inferential processes. This is to say that because an inference begins as tacit knowledge does not mean we are consigned to remain in ignorance of our own classification processes. Eventually we can more or less give a complete account of how we connected elements in our interpretation of an event. For instance, it may only be after time and several episodes that I am able to associate the avoidance of eye-contact with deception. However, once I have made this association, I am both capable of retrospectively accounting for previous events as well as current or future episodes.

What I mean by "amount of inference" exists on at least two dimensions. One dimension may be considered quantitative in which the number assumptions made can be counted. For example, in order for me to infer you are present in the room with me, I only need to make a "see" you. As long as I choose to "believe my eyes," this single step is sufficient. However, if I find your fingerprint in the room, I must first "see" the fingerprint,

one inference, and then I must logically associate it with a rule which says something like "each person has a unique set of fingerprints, so your fingerprints mean only you could have placed them here," a second inference. Presumably, the more steps I have to go through to provide an account, the more subject to error, misinterpretation, or distortion my inferences become.

The second dimension in which "amount of inference" may be understood is a qualitative one. "Seeing," "touching," and our other "senses" operate in the domain of "perceptual" inferences. Perceptual inferences ultimately ask the question "is my sense perception reliable?" Does the sense impression (percept of reality) I have comport with the phenomenon. If the observed object is spherical, do I perceive it to be spherical. We may think of perceptual inferences as "descriptions" of reality.

In addition to descriptive perceptual inferences, there are also "logical" inferences operating in the qualitative dimension. "Logical" here is meant in the broad sense of our ability to provide a "comprehensible account." (Polanyi 1962, 332) While conformance to specifiable rules of association such as one would find in formal deductive modes of induction and deduction are certainly included here, logical inferences may also include the heuristic principles of simple decision rules (Chaiken 1987; Petty and Cacioppo 1986). The identification of fingerprints as the unique characteristics of an individual illustrates the operation of a "logical" rule in the qualitative dimension of

amount of inference.

Presumably, a "perceptual" inference is different in kind from a "logical" inference. While perceptual inferences are validated by their conformity with the phenomenon, logical inferences are validated by the conformity with a specifiable rule. Given that the specification of a rule represents a higher level of abstraction, description of phenomenon through perception would require "less" inference than logical inferences.

The second assumption, less inference is preferred, gives the "Inverse" label to the model. Evidence is the (inferred) interpretation of phenomena within a frame of reference. Since less inference is preferred, the hierarchy in which evidence would be evaluated would favor evidence obtained through quantitatively fewer steps and qualitatively less abstract processes. Hence, the order would be "inverse" to the amount of inference required. Whether this inverse order actually describes the characteristic inference processes of ordinary language users is open to question. Before I address it, two further assumptions about the model need to be developed.

The third assumption of the Inverse Inference Model is that the frame of reference, through which evidence is interpreted, is subjective. Individuals' "frame of reference" for interpreting events reflects accumulated experience, information, and perspective. As the individual psychological elements vary, so do the patterns of social experiences. Two individuals who apparently share similar backgrounds, nevertheless may differ in their

constructions and understanding of shared events. And even as subjectivity may be used to characterize differences between individuals, it is also an appropriate referent to describe variation within the same individual at different times.

The frame of reference is neither arbitrary nor completely systematic. In claiming a frame of reference is not arbitrary, I am asserting that we organize experience in meaningful units which persist if they are successful and are revised or discarded if they are not (Kelly 1963). While the term "frame of reference" may imply the organization of information into an integrated whole, I am more inclined to represent it as a plural term; that is, each individual will have multiple frames of reference.

Kelly's "Fragmentation Corollary" (1963) approaches the understanding I wish to employ here. Kelly proposed that "a person may successively employ a variety of construction subsystems which are inferentially incompatible with each other." (83) A person may maintain incompatible beliefs because while our belief systems are collateral, they are not lineal. I may simultaneously subscribe to the value of pluralism (and so be tolerant of others' religious beliefs) while at the same time adhere to the legitimacy of proselytism (and seek to convert others to my religious convictions).

One consequence of the fragmented frame of reference individuals employ to make sense of their reality is the variety of interpretations which may be offered in explanation of a phenomenon, whether by different people or the same person at different

times. Burke's (1966) notion of "terministic screens" illustrates the effect through a symbolic filter which selects, reflects and deflects reality. Our "frame of reference" similarly serves to draw attention to some features while ignoring or discounting others. Depending upon the lens through which the event is viewed, our interpretation of its meaning alters.

The final assumption of the Inverse Inference Model is a qualification of the presumed subjectivity of our frame of reference. The frame of reference is relatively stable, even though it is subject to change. While frames of reference are ultimately arbitrary, they are not capricious. The evolution of our beliefs into systems is governed both by it success in accommodating existing belief structures as well in its ability to anticipate new information. It is not so much that a frame of reference is consistent, per se. Rather, the apparent absence of dissonance dispose us toward retaining a frame of reference. As Kelly (1963) notes in the Organization Corollary, "each person characteristically evolves, for his convenience in anticipating events, a construction system embracing ordinal relationships between constructs." (56)

The stability of a frame of reference is supported by at least three factors. First, there is a self-fulfilling prophecy toward the selective reinforcement of pre-existing structures. If one expects people to be "friendly," the disposition to "seeing" friendliness makes it more likely to be observed. Second, because of the collateral nature of belief systems, even

where inconsistent elements in a frame of reference do exist, one may not interpret the inconsistency as inconsistent. I may not like dogs, but I don't perceive my liking my sister's Irish setter as inconsistent within my frame of reference. Finally, part of my frame of reference may include the mechanism by which inconsistency, when exposed, gets transcended.

The effect of these latter two assumptions to the Inverse Inference Model is to account for the durability of interpretations individuals offer. Subjectivity allows wide individual variation while stability tends to maintain the frame of reference over time. Ordinary language users as naive social actors need not be able to articulate the assumptions of the Inverse Inference Model in order to employ them in their casual attributions of evidence. If the model appropriately describes the heuristic decision rules persons employ, their use is sufficient.

Application to Traditional Evidence Categories

The Inverse Inference Model organizes the traditional categories of evidence following from its assumption that evidence requiring less inference is preferred to evidence which requires greater inference. I believe at least three levels of evidence emerge for categorizing evidence types through this model presented in the order of least inference required to most required.

1. Evidence only requiring a perceptual inference.

The evidence an individual obtains as the result of first-

hand experience should require the least amount of inference. Called "direct" or "real" evidence (Ehninger and Brockreide 1978), the only interpretation required of observers is whether they should believe their own sense perceptions, i.e., did I really hear what I thought I heard, see what I thought I saw, etc. Often, in direct evidence, the object is offered as proof of its existence.

Perceptual inferences are descriptive in that they interpret meaning through classification. If I am asked to identify an unfamiliar animal at the zoo, I place it into the classification category it most closely resembles through a comparison of essential features. So an animal which has a beak, feathers, wings, talons, etc. is classified as a bird because it is seen as the best fit among the categories of animals I know. Notwithstanding the possibility of perceptual distortion, evidence which only requires observers to rely on their senses and is commonly known as direct or real evidence should require the least amount of inference.

2. <u>Evidence requiring both a perceptual inference and at least one level of logical inference by the observer</u>.

Indirect or circumstantial evidence is evidence which meets this second level of evidence because there are at least two levels of inference. There must first be the perception of some event though one of more of the five senses (a perceptual inference)--a fingerprint, a lipstick smudge on a shirt collar, etc.--which then in turn must be connected through a rule which then allows an account to be given. The observation of lipstick on a

shirt collar is only evidence of lipstick on a shirt collar. It is the connection of the observed event with a rule (e.g., lipstick of a shade not favored by my wife must mean someone else put it there) that gets me in trouble.

The key elements distinguishing this second level from the first are that it involves both a perceptual and logical inference by the observer. The observer still has a first-hand perception of an event, but the perceptual inference, by itself, is inadequate to authorize the interpretation. It is only when the perceptual inference is connected with one or more logical inference that the interpretation is warranted.

3. Evidence requiring multiple levels of logical inference without a direct perceptual inference by the observer.

The distinction between the second category and this category is that the observer does not directly observe an event, but rather relies entirely upon a second-hand report or interpretation of an event. At least two traditional categories of evidence fall into this level of abstraction, testimony and statistics.

In testimony, the observer is dependent upon a witness who narrates a retelling of the event. The observer cannot directly observe anything as it originally occurred. If we took the lipstick on the shirt-collar example, the observer must now rely on the witnesses' perceptual inference. Even if the witness endeavors to maintain fidelity to the perception, an array of recall errors may combine with transmission (incorrect description) or reception (mishearing/misunderstanding) errors. So at

least one additional level of abstraction is added beyond the level of perceiving circumstantial evidence.

Statistics also remove from the observer the ability to directly perceive an event. Statistics, as the compilation of individual cases represented through a numeric expression allow the compiler of the cases to make a number of decisions outside the purview of the observer. How a researcher chooses to compile categories, select cases to include in the categories, execute statistical measures, and interpret the results are all decisions that remove first-hand perception from the observer of the evidence. Consequently, the observer is entirely dependent upon someone else's interpretation of the event analogous to hearing testimony.

The categorization of evidence through the Inverse Inference Model of Evidence is a preliminary attempt to organize the manner in which the ordinary language user perceives the use of evidence. As one moves through the subsequent evidence categories, the observer of the evidence has diminishing control over direct apprehension of the evidence and must rely upon increasing levels of inference in order to accept the evidence. It is contented that this hierarchy of evidence corresponds with diminishing levels of evidence acceptability among naive social actors. In subsequent manuscripts, I will explain the heuristic rules employed.

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Endnotes

1. The Winter 1994 issue of the Western Journal of Communication continues this dialogue. See especially Liska & Chronkhite; Scheidel; and Berger.